

## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. 2001-NE-16-AD; Amendment 39-12698; AD 2002-07-04]**

**RIN 2120-AA64**

### **Airworthiness Directives; Pratt & Whitney JT9D-7R4 Series Turbofan Engines**

**AGENCY:** Federal Aviation Administration, DOT.

**ACTION:** Final rule.

-----

**SUMMARY:** This amendment adopts a new airworthiness directive (AD), that is applicable to Pratt & Whitney (PW) JT9D-7R4 series turbofan engines. This amendment requires a one-time inspection of low pressure turbine (LPT) 5th stage disks for evidence of blend repairs and mechanical damage, and replacement of the affected disks based on the extent of those repairs and damage. This amendment is prompted by a report of a PW JT9D-7R4G2 turbofan engine that experienced an uncontained failure of the LPT 5th stage disk. The actions specified by this AD are intended to prevent uncontained failure of the LPT 5th stage disk, due to incomplete blend repairs, resulting in in-flight shutdown and damage to the airplane.

**DATES:** Effective date May 14, 2002. The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of May 14, 2002.

**ADDRESSES:** The service information referenced in this AD may be obtained from Pratt & Whitney, 400 Main St., East Hartford, CT 06108; telephone (860) 565-8770; fax (860) 565-4503. This information may be examined, by appointment, at the Federal Aviation Administration (FAA), New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA; or at the Office of the Federal Register, 800 North Capitol Street, NW, suite 700, Washington, DC.

**FOR FURTHER INFORMATION CONTACT:** Tara Goodman, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Office Park, Burlington, MA 01803-5299; telephone (781) 238-7130, fax (781) 238-7199.

**SUPPLEMENTARY INFORMATION:** A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an AD that is applicable to PW JT9D-7R4 series turbofan engines was published in the Federal Register on August 30, 2001 (66 FR 45789). That action proposed to require a one-time inspection of low pressure turbine (LPT) 5th stage disks for evidence of blend repairs and mechanical damage, and replacement of the affected disks based on the extent of those repairs and damage, in accordance with PW service bulletin (SB) JT9D-7R4-72-574, Revision 1, dated June 26, 2001.

## **Comments**

Interested persons have been afforded an opportunity to participate in the making of this amendment. Due consideration has been given to the comments received.

## **Clarification of Areas To Be Inspected**

One commenter states that the areas of inspection are not defined for the requirement to remove disks with five or more blended or unblended areas of damage by any cause. By not defining the areas of inspection, blends or areas of damage anywhere on the disk could be counted. The commenter states that blends to remove part markings such as TT and TC marks or other blends on fir trees, for example, should not be counted toward the five or more rejection limit.

Another commenter requests clarification of whether a disk may be returned to service after five or more blended or unblended damage areas are found on the disk but all of the damage is identified as non-tiebolt damage. The clarification is requested because the blended areas or areas of damage called out in the NPRM are not specific. The commenter also asks if the determination of acceptance of a disk could be done on a case-by-case basis.

The FAA agrees that the proposal does not specify where on the disk to look for blended areas or areas of damage. Therefore the FAA has changed paragraph (a)(2) of this final rule to specify that the areas to be inspected are the forward and aft web and bore areas. The FAA disagrees, however, that disks with five or more areas of damage in the forward and aft web areas may be returned to service, even if the damage is known to be unrelated to a tiebolt failure during operation. Operators may request case-by-case review using the procedure to request an Alternative Methods of Compliance, paragraph (c).

## **Use the Same Wording as the Service Bulletin**

One commenter requests that the FAA use the same wording in the compliance instructions for the AD as that which is contained in PW Service Bulletin (SB) JT9D-7R4-72-574. Paragraph (a)(1) of the proposal states: "remove from service those LPT 5th stage disks that were installed in engines that experienced a tiebolt fracture AND are found with blended or unblended damage in the web and bore areas, and replace with a serviceable disk." In place of the AND above, the SB uses the word OR. Using the word AND, implies that the final rule would require both tiebolt fracture history and damage to meet replacement criteria.

The FAA disagrees that any change to Paragraph (a)(1) is necessary, but agrees that the final rule could be worded clearer. Paragraph (a)(1) of the proposal covered those disks for which the operator knew that the damage was due to tiebolt failure. Paragraph (a)(2) of the proposal covers those disks for which the tiebolt fracture history is unknown. The FAA has changed final rule paragraph (a)(1) to clarify that it applies to disks for which there is a known history of tiebolt failure in operation.

## **Exclude Damage Caused by Tierod Removal**

One commenter states that many disks have tierod removal damage on the rear side of the disk, due to tierod fracture during disassembly. The commenter requests that damage found on the rear side of the disk, that is in line with the tierod holes should not be taken into account because it is due to tierod removal. The commenter requests that alternate inspection requirements be provided that identify the type of damage rather than the number of damaged areas.

The FAA partially agrees. The FAA agrees that the wording should include the specification that the tierod damage occurs during operation. Therefore, the FAA has changed the wording in final rule paragraph (a)(1) to specify that the damage must be due to tiebolt fracture during operation. This change is justified because high-energy damage to the disk caused by a tiebolt fracture occurs during operation rather than during LPT disassembly. However, the FAA does not agree that the type of damage, as a result of tiebolt failure during operation, should be specified differently than specified in PW SB JT9D-7R4-72-574. A tiebolt fracture during operation is capable of damaging the aft side of the disk in the web and bore areas. The FAA expects operators to use good maintenance practices to prevent damage to disks during LPT disassembly. If damage occurs during disassembly, the Engine Manual must be used to determine serviceability.

## **Concern for Engine Manual Revision**

One commenter expresses concern that neither the proposal nor PW SB JT9D-7R4-72-574 indicate that the Engine Manual-provided blend repair (Section 72-52-11, Repair-01 for JT9D-7R4G2 Engines) will be revised to effectively address the tiebolt failure mode and cause. The compliance in the proposal does not prevent future blending of the disk web and bore when the disk is routed for repair after the one-time mandated visual inspection has been completed. The commenter requests that the Engine Manual blend repair be referenced in the final rule.

The FAA agrees that the AD and the Engine Manual should address future situations where the one-time mandated visual inspections are completed. The manufacturer will include a requirement in the Engine Manual to remove from service any LPT 5th stage disk that experienced damage to the fore and aft web and bore areas from a fractured tiebolt during operation. The intent of the AD is to specify a one-time inspection of LPT 5th stage disks. In addition, the AD will more clearly state in paragraph (b) of the compliance section that any LPT 5th stage disk that experiences damage to the fore and aft web and bore areas from a fractured tiebolt during operation must be removed from service. The repair and serviceability requirements for LPT 5th stage disks are not part of the AD.

## **Revision to Manufacturer's Service Information**

The manufacturer comments that since the publication of the proposal, Revision 2 of the SB has been published, which provides a revised Figure 2 and a consistent description of the one-time inspection rejection criteria.

The FAA agrees and has added this SB Revision to the incorporation by reference.

After careful review of the available data, including the comments noted above, the FAA has determined that air safety and the public interest require the adoption of the rule with the changes described previously. The FAA has determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

## **Economic Analysis**

There are approximately 647 Pratt & Whitney (PW) JT9D-7R4 series turbofan engines of the affected design in the worldwide fleet. The FAA estimates that 151 engines installed on airplanes of U.S. registry would be affected by this AD. The FAA also estimates that it would take approximately one work hour per engine to accomplish the proposed actions, and that the average labor rate is \$60 per work hour. A replacement disk would cost approximately \$145,260 per engine. Based on these figures, the total cost effect of the AD on U.S. operators is estimated to be \$21,943,320.

## **Regulatory Analysis**

This final rule does not have federalism implications, as defined in Executive Order 13132, because it would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Accordingly, the FAA has not consulted with state authorities prior to publication of this final rule.

For the reasons discussed above, I certify that this action (1) is not a "significant regulatory action" under Executive Order 12866; (2) is not a "significant rule" under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and (3) if promulgated, will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. A final evaluation has been prepared for this action and it is contained in the Rules Docket. A copy of it may be obtained by contacting the Rules Docket at the location provided under the caption ADDRESSES.

## **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

## **Adoption of the Amendment**

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (14 CFR part 39) as follows:

### **PART 39--AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

Sec. 39.13 [Amended]

2. Section 39.13 is amended by adding a new airworthiness directive to read as follows:

# AIRWORTHINESS DIRECTIVE



Aircraft Certification Service  
Washington, DC

U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

*We post ADs on the internet at "[www.airweb.faa.gov/rgl](http://www.airweb.faa.gov/rgl)"*

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

**2002-07-04 Pratt & Whitney:** Amendment 39-12698. Docket No. 2001-NE-16-AD.

## Applicability

This airworthiness directive (AD) is applicable to Pratt & Whitney (PW) JT9D-7R4D, -7R4D1, -7R4E, -7R4E1, -7R4E4, -7R4G2, and 7R4H1 series turbofan engines with LPT 5th stage disks, part numbers (P/N's) 787905, 787905-001, and 798305 installed. These engines are installed on, but not limited to Airbus Industrie A300 and A310 series, and Boeing 747 and 767 series airplanes.

**Note 1:** This AD applies to each engine identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For engines that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (c) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

## Compliance

Compliance with this AD is required as indicated at the next separation of the LPT module from the engine, unless already done.

To prevent uncontained failure of the low pressure turbine (LPT) 5th stage disk due to incomplete blend repairs, resulting in in-flight shutdown and damage to the airplane, do the following:

(a) Perform a one-time visual inspection for evidence of blend repairs of LPT 5th stage disks, P/N's 787905, 787905-001, and 798305 in accordance with the Accomplishment Instructions section of PW service bulletin (SB) JT9D-7R4-72-574, Revision 1, dated June 26, 2001, or SB JT9D-7R4-72-574, Revision 2, dated January 21, 2002.

(1) Remove from service those LPT 5th stage disks that have any amount of blended or unblended damage in the forward and aft web and bore areas, that was caused by a tiebolt fracture during operation, and replace with a serviceable part.

(2) Remove from service LPT 5th stage disks that have five or more areas of blended or unblended damage by any cause in the forward and aft web and bore areas and replace with a serviceable part.

(b) After the effective date of this AD, do not install any LPT module that contains an LPT 5th stage disk, P/N 787905, 787905-001, or 798305 unless that disk has been inspected as specified in paragraph (a) of this AD. After the effective date of this AD, do not install any LPT 5th stage disk that experiences damage to the fore and aft web and bore areas from a fractured tiebolt during operation.

### **Alternative Methods of Compliance**

(c) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Engine Certification Office (ECO). Operators must submit their request through an appropriate FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager, ECO.

**Note 2:** Information concerning the existence of approved alternative methods of compliance with this airworthiness directive, if any, may be obtained from the ECO.

### **Documents That Have Been Incorporated by Reference**

(d) The inspection must be done in accordance with the following Pratt & Whitney Service Bulletins (SB's):

<b>Document No.</b>	<b>Pages</b>	<b>Revision</b>	<b>Date</b>
SB JT9D-7R4-72-574	All	1	June 26, 2001.
Total pages: 16			
SB JT9D-7R4-72-574	1-3	2	January 21, 2002.
	4-9	1	June 26, 2001.
	10-12	2	January 21, 2002.
	13	1	June 26, 2001.
	14	2	January 21, 2002.
	15-16	1	June 26, 2001.
Total pages: 16			

This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from Pratt & Whitney, 400 Main St., East Hartford, CT 06108; telephone (860) 565-8770; fax (860) 565-4503. Copies may be inspected, by appointment, at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA; or at the Office of the Federal Register, 800 North Capitol Street, NW, suite 700, Washington, DC.

### **Effective Date**

(e) This amendment becomes effective on May 14, 2002.

Issued in Burlington, Massachusetts, on March 29, 2002.

Robert G. Mann,  
Acting Manager, Engine and Propeller Directorate, Aircraft Certification Service.  
[FR Doc. 02-8171 Filed 4-8-02; 8:45 am]  
BILLING CODE 4910-13-U